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Experience Using the Blood-Loc and Other Barrier Systems to Prevent Transfusion of Blood to the Wrong Patient

A transfusion medicine physician colleague in Southern California reports that her hospital administration has asked that their transfusion service evaluate the Blood-Loc System (TM) for creating a physical barrier to transfusing the wrong unit to a patient. Her concern is that key populations at risk of receiving the wrong blood product include patients suffering trauma, those needing emergency surgery, and those receiving urgent transfusions in the emergency room. However, these patient groups are the very ones for which clinicians are most likely to ask for an exemption from a physical barrier system as they may perceive such a system causing undo delay in the provision of blood products in dire emergencies. The inquiring physician wonders if anyone is using the Blood-Loc System, and if so, what has been the experience for these groups (and other groups) of patients? Are other barrier systems in use in the US or the world? Can you give any recommendations?

Dr. James P. AuBuchon of Dartmouth-Hitchcock Medical Center (DHMC) previewed the above question, since the Editor is aware that a Blood-Loc system is in place at his institution. According to Dr. AuBuchon, (attribution used with permission), "there are two systems available on the US market that actively interdict a potential mistransfusion. The first of these is a mechanical barrier system (**Bloodloc**, Novatek Medical, Greenwich, CT). A sticker with a random three-letter code is affixed to the patient's wrist band, and the code is written on the pre-transfusion testing tube by the phlebotomist. This code is used to lock a plastic lock over the outlet ports of the red cell unit or through a hole in the top of an overwrap bag. The only place for the transfusionist to obtain the code to open the lock is from the arm of the patient who gave the pretransfusion specimen, thus detecting and interdicting at least three-quarters of potential mistransfusions. (In a decade of use at DHMC (spanning approximately 240,000 T&S specimens and 100,000 RBC transfusions), the system has been solely responsible for detecting 35 samples that were labeled with the wrong patient's name and as involved in preventing three mistransfusion episodes at the bedside.)

Dr. AuBuchon reports that an electronic approach was previously represented in the **I-Trac system**, which had been marketed by Immucor. A newer version of this system (with improvements) is now known as **PatientSafe-TransfuseID** (for recipient identification and tracking) and -SpecimenID (for specimen labeling). It is marketed by **AMTSystems**. The system uses a **PDA fitted with a barcode reader** to interpret a barcoded patient wristband and generate, through a portable printer, a (legible and complete!) sample label right at the bedside. The same unit can compare the identities of the potential recipient and the intended recipient (as stated on a bar coded unit label) immediately prior to transfusion. Dr. Gerald Sandler of Georgetown University has reported that this system was well accepted by nursing staff on medical wards. At DHMC, we, too, found that it would work well on medical wards or for the transfusion of outpatients. **However, DHMC's anesthesiologists were unwilling to give up the Blood-Loc system because, as they stated, "We have to use it."** They were concerned that, in a moment of crisis or time pressure, they would simply attempt to read the information on the unit label by eye rather than taking the few seconds necessary to document the match electronically. The mechanical barrier system had to be reckoned with or there would be no transfusion.

Dr. AuBuchon concludes: "This highlights a **key feature** of the protocol of either of these systems **They must be used routinely, without fail, in all circumstances where mistransfusion is a possibility or a risk.** If options are given not to use the system, the situations where mistransfusion are most likely to occur - in the OR and the ER, for example - will be those where the safety systems are not used, and they will not deliver their benefit. At DHMC, we use the Blood-Loc system for 'all' RBC transfusions with the **exception of Group O Rh negative units released using our "block release" protocol for emergency transfusion.** Obviously, these units represent little risk if mistakenly transfused to the wrong recipient. (Furthermore, their unique paperwork identifies them as part of an emergency transfusion of uncrossmatched blood, and this also serves to alert the transfusionist so that mistransfusion is unlikely in a simultaneous but more routine circumstance.)

The following comments have been received.

ADDENDA Dec. 31, 2003

1. **Gregory Francis of Korchek Technologies** comments: "There are other systems available on the market for correctly identifying patients at the bedside. We currently have a system, **CareChek**, that uses **barcode scanning** at the bedside. The system comes in 3 modules: Specimen Collection, Blood Product Administration, and Medication Administration. The **advantage of using a computerized system** over ID banding or a physical barrier system is the ability to electronically **record** required data associated with a transfusion. Computerized systems should not only improve the patient identification process but also improve documentation of vital signs, appearance of unit, etc.

Both types of systems have advantages and disadvantages, and each institution should evaluate all systems available to determine what works best for them. Technology has improved in all areas of health care and we should take advantage of it to improve the safety of transfusion medicine."

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Posted: December 18, 2003

Addenda: Dec. 31, 2003